Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

1870. The following table shows the increase for each period in the proportion of the total gainfully employed which were industrial wage-earners.

1870 to 1880	14.3 per cent increase
1880 " 1890	6.6 " " "
1890 " 1900	9.0 " " "
1900 " 1910	8.2 " " "
1910 " 1920	11.1 " " "

The "urban upper and middle" classes, including the proprietors and officials, professional and lower salaried groups, have increased from 19.2 per cent of the total gainfully employed in 1910 to 23.8 per cent in 1920. The "urban workers," including the industrial wage-earners and the servant groups, have increased from 42.3 per cent in 1910 to 45.5 per cent in 1920. On the other hand the "rural group," including farmers and farm laborers, has decreased from 32.4 per cent in 1910 to 25.5 per cent in 1920.

BRITISH BANKING STATISTICS

By W. F. Crick, *University of London*

One of the most striking characteristics of the scientific treatment of banking in the United States is the wealth of statistical material which is placed at the disposal of those professionally or academically interested in the subject. By contrast with this enormous stock of material the British banking statistics are woefully inadequate. The underlying explanation of this obvious contrast is of course the system of bank examination which has grown up throughout the period of American banking history, and the legal insistence upon the submission of periodical statements of financial condition. The National Bank Act and the Federal Reserve Act—to deal only with federal requirements—have given rise to an admirable body of evidence for use by the practical economist. The current reports supply an excellent basis for the interpretation of the present as an index of the future, without which the equipment of any far-seeing banker or business man is incomplete.

In Great Britain, however, with the exception of the statements of the Bank of England and the half-yearly statements of the other joint stock banks, there is no legal requirement whatsoever as to the publication of accounts. This fact is reflected in an excessive disposition to secrecy on the part of the British banker, which gives rise not only to an unwarrantable liability to public criticism, but also to insuperable obstacles to such detailed scientific analysis as is made possible in this country.

Herein lies a fundamental cleavage between the personnel of banking and its place in the economic structure of the United States and in that of Great Britain. The British banker, trained as a specialist from youth and very frequently the representative of a long line of banking ancestors, relies on tradition and instinct for much of the guidance which the American seeks in facts and figures. The American banker, often enough, is far from being solely a banker. The needs of the locality in which he works, and the impossibility of the thorough subdivision and specialization of functions that is a feature of the large American as well as the British banks, bring him into direct concern with the broader economic problems of his own community. Moreover, the "free" banking system cultivates an intense individualism and a self-reliance which demand a supply of something more tangible than tradition and instinct on which to base decisions.

In America, too, the conception of banking as a public function is much more widely diffused and recognized than it is in Great Britain. It is difficult to conceive of a member of the British Parliament attacking the "deadly deflation policy" of the Bank of England, and a general election fought on the issue of a single or double monetary standard can only be imagined as a fantastic illusion conjured up by a magician with a predilection for financial subject-matter. Public interest in banking as a vital part of the economic mechanism is in Great Britian practically non-existent. Hence there is no call for the publication of banking statistics, except the demand of distracted economists and students, such as would certainly arise in the United States should the present publicity be curtailed.

The *Federal Reserve Bulletin* and the reports of the Comptroller of the Currency, the Federal Reserve Board, and the State Bank Commissioners are incomparable for their wealth of detail and clarity of exposition. Moreover, their compilation by impartial agencies, and the irregular periodicity of the Comptroller's reports, makes "window-dressing" a more difficult operation than was the case under the old British system. Hence the problem for the investigator is not by any means that of amplifying or increasing the available data, but rather of interpreting and searching for their exact implications. The foreign observer, in particular, often fails to see the wood for the trees. The trees are admirably cultivated, but that only tends to make the foliage thicker. The problem in England, on the other hand, is to secure any statistics that will form a reasonably sound basis for considered deduction.

Accordingly, for the benefit of American business men and students who may profit from a skilfull study of the British bank statements from time to time, it may be of use to clear up some frequent causes of misconception, to fill in some of the pitfalls which lie in the path of the investigator, and to call attention to a comparatively new, and therefore almost unrecognized, source of banking information.

I

The weekly statement of the Bank of England is known and quoted everywhere as indicative of the state of health of the British banking organism. It was said at the outset that one of the two types of statement required by law was that applying to the Bank of England. When it is remembered, however, that this requirement was prescribed in 1844, under the Bank Charter Act, at a time when some of what are now the most elementary conceptions of banking theory had scarcely been formulated, it is not to be wondered at that this weekly statement is hopelessly antiquated. The Act prescribed that an account of notes issued, of the securities and gold and silver coin and bullion in the Issue Department, of the capital stock and deposits, and the money and securities in the Banking Department was to be published weekly in the *London Gazette*. The following is the form of statement used:

BANK OF ENGLAND

AN ACCOUNT PURSUANT TO THE ACT 7 AND 8 VICT. C. 32, FOR THE WEEK ENDING ON AUGUST 9, 1922

Issue Department

	£		£
Notes issued	144,029,625	Government debt	11,015,100
		Other securities	7,434,900
		Gold coin and bullion	125,579,625
	£144,029,625		£144,029,625

Banking Department

	£		£
Proprietors' capital	14,553,000	Government securities	43,032,505
Rest	3,483,082	Other securities	75,450,390
Public deposits	16,238,919 [1]	Notes	18,487,415
Other deposits	104,500,212	Gold coin and bullion	1,820,255
Seven-day and other bills	15,352		
	£138,790,565		£138,790,565

August 10, 1922 Signature of Cashier.

[1] Including Exchequer, Savings Banks, Commissioners of National Debt, and Dividend Accounts.

The first statement, by itself, tells us nothing. The items "Government debt" and "Other securities" always total £18,450,000—the amount of notes permitted to be issued against securities. Even the term "Notes issued" does not by any means give ground for thinking that there are £144 millions of Bank notes in circulation. If the second statement be consulted it will be found that some £18½ millions are held in the Banking Department. Furthermore, by government accounts (which will be dealt with at a later stage), published independently, it is shown that over £21 millions are held in the reserve against currency notes. Hence, in fact, only £104½ millions are outside the Bank. It is still impossible to say how much of this amount is in actual circulation. A great part of it is held by the other banks as a part of their cash reserves, and no discrimination is made between notes and coin in the returns of these banks. These defections in the statistics are not obvious, and hence it is easy to jump at the conclusion that the public is making use of £144 millions of Bank of England notes.

Turning now to the second statement, the mysterious item "Rest" merely represents undivided profits, and hence, for all practical purposes, using the term in its accounting as opposed to its banking sense, reserve. This item simply serves as an indicator of the size of the next dividend, since the reserve is never allowed to fall below £3,000,000 and naturally increases as the time for a dividend declaration approaches. The deposit items are self-explanatory. Prior to 1877, however, they were much more instructive, for the item "Other deposits" was split up into bankers' balances and private deposits. These figures clearly gave a much better indication of the available credit power of the banks. Now they are practically worthless, for they fluctuate, not primarily through economic causes, but inversely in relation to each other. The reason is clear, in that the functions of the Bank as fiscal agent of the government bring about frequent transfers from one to the other, as, for instance, when income tax is paid, or the interest on government securities. Any extraordinary rise, such as that occasioned by war exigencies, does of course testify to an expansion of credit, but it is altogether too complicated a figure to be used as even an approximate index of the extent to which credit has been extended. The last item, notably small, but formerly of much greater magnitude, consists mainly of Bank Post Bills, a form of acceptance used for transmission purposes. A curious relic of the days of highway robbery in England, it now has the character, when accepted, of a bearer instrument.

The items on the assets side are more complicated. The word "securities" is used in a very broad sense, a sense altogether out of touch with modern terminology. Thus "Government securites" includes not only long-time investments but Exchequer Bills, Treasury Bills, and even Ways and Means Advances to the government. Here are at least two fundamentally distinct classes of assets, hopelessly mixed. The next item is similarly constituted. It comprises not only long-term securities not issued by the government, but also bills discounted and all advances other than those extended to the government, quite apart from any question of the security behind them or their tenor. Nothing, therefore, can be gained from an examination of these items, except the fact that an increase in both *usually* betokens an expansion of credit, although it *may* quite as well mean increased holdings of long-term securities. From the point of view of the investigator the distinction made is not the one he would prefer. A separation of investments from bills and advances would be of much greater value than the present distinction between the persons liable on the instruments.

It is from these two items that the Bank's "ratio" is calculated. For all practical purposes the Bank note is a gold certificate. Hence the notes and coin held in the Banking Department are the cash reserves against the liabilities of the department. The liabilities against which they are held are simply the deposits. Hence the last two items on the assets side, divided into the sum of the third and fourth on the liabilities side, give what is perhaps the most important of the Bank's published figures, the "reserve ratio."

II

The condition of the joint stock banks is a much better criterion of credit conditions in the country than the statement just described, for, although the Bank of England is not so exclusively a "bankers' bank" as are the Federal Reserve Banks, yet it has comparatively little direct contact with the public. The outside banks, in contradistinction, are purely bankers for the public, and hence reflect the activities and sentiments of the public much more accurately, since directly, than does the Bank of England.

The joint stock banks, in addition to their half-yearly detailed balance sheets which, in common with all corporations, they are required by law to compile,[1] began a few years before the war to issue monthly statements. These were discontinued during the war, when they would have been invaluable, and have been resumed only since January, 1921.

---

[1] The Companies (Consolidation) Act, 1908, requires all public companies to file annually with the Registrar of Joint Stock Companies a "statement in the form of a balance sheet." These statements are almost invariably published, though it is not yet definitely established whether publication is a legal requirement. (See L. R. DICKSEE: *Advanced Accounts*). A banking company, however, is specifically required to exhibit publicly, semi-annually, a statement of capital, liabilities, and assets.

With the limitations of date to which they are subject, these figures are very valuable. The banks differ among themselves, as would be expected, in matters of detailed presentation. Nevertheless, the separate statements permit of combination into tables which, though imperfect, are better than anything previously supplied. The composite figures[1] are compiled from the averages of the weekly returns which constitute the monthly reports of the individual banks. It is significant that these statements seem to have eluded the attention of American economic and financial periodicals which supply current information regarding conditions in foreign countries. The *Federal Reserve Bulletin* supplies a part of these data, but by unofficial publications they are practically ignored. Yet the figures are, in reality, much more significant than those of the Bank of England. The items on the liabilities side are quite straightforward. They include paid-up capital; reserve fund; notes in circulation; current, deposit, and other accounts; and acceptances. While it would be very valuable to have the current and deposit accounts separated, this combined figure is of much greater value than the figures of the Bank of England as a rough index of the volume of credit in existence. The assets comprise coin, bank and currency notes and balances with the Bank of England; balances with, and cheques in course of collection on, other banks in Great Britain and Ireland; money at call and short notice; investments; bills discounted; advances; liabilities of customers for acceptances; bank premises; and investments in affiliations. The first two items, of course, might be improved by further subdivision. The present condition of the Bank of England's ratio makes it very desirable to know how much of this most liquid of the banks' assets consists of coin, how much of notes, and how much of Bank balances. The second, again, is an unfortunate combination of two items that it might be desirable to separate.

It is difficult to make any very close comparison between these statistics and those published in America. The data relating to the Federal Reserve Banks are clearly out of the question, and the statements of the national banks are issued only five times yearly and include only one third of the total number of banks in the country. Probably the statements of the reporting member banks of the Federal Reserve System are the most directly comparable. The nine London clearing banks, with their branches all over the country, probably perform quite as large a proportion of the country's business as do the 800 reporting member banks in the United States. Moreover, the frequency of these reports, and the fact that they are compiled from returns supplied by the banks themselves, facilitate direct comparison.

[1] Published in the *Monthly Review* of the London Joint City and Midland Bank, and elsewhere.

For purposes of such comparison several of the items in the American figures would have to be thrown together, since subdivision is not carried so far in the British reports. Thus, "net demand deposits," "time deposits," and "government deposits" would have to be combined in order to compare with the British "current, deposit and other accounts." Again, "reserves with the Federal Reserve Banks" and "cash in vault" would have to be combined to correspond with the British "coin, bank and currency notes, and balances with the Bank of England." The comparison, however, falls short of completeness, owing to the omission of some items in the member banks' reports, such as "capital" and "bank premises," which appear in the British statistics. But in any case the comparison cannot be a close one.

For internal purposes, however, these statements are a distinctive and valuable contribution to banking data. Not the least of their valuable characteristics is the fact that they are now free from the charge of "window-dressing." Before these statements were issued it was almost universally recognized that the banks regularly contracted their advances and increased their Bank balances specifically in order to make a good showing in their half-yearly returns. Critics of the statistics are now disarmed, however, by the fact that the monthly figures are averages of weekly returns. It would clearly be impracticable for the banks to "dress their windows" four or five times a month. Hence it may fairly be argued that the returns as now published do not tend to exaggerate the liquidity of the banks' position.

III

In addition to these two sources of information there are two others of some interest and value. They are the clearing house returns and certain parts of the Government returns, issued weekly. The report of the London Clearing House is, naturally, the most important. The banking business of Great Britain is concentrated in London to a much greater extent than the banking business of the United States is concentrated in New York.[1] Hence the London returns furnish a more accurate index of the volume of business in England than the New York returns do of the volume of business in the United States. On the other hand, the London figures are affected so much by speculative activity that the elimination of this element cannot be effected as easily as in the United States by using country clearings. It is true that the London Clearing House differentiates between "Town" and "Country" clearings, but even this discrimination is largely nullified by the fact that so much country business is financed through London that much of the provincial activity reflects itself, in monetary terms, in the Town clearings.

---

[1] The returns of the London Clearing House, for example (as quoted by the *Economist*), showed a total of clearings for the year 1922 up to August 16 of £24,249,921,000, while those of the 11 leading provincial houses together in the same period reached only £1,269,843,600. By contrast, the New York clearings (according to the *Commercial and Financial Chronicle*) for the week ending August 19, 1922, totalled $3,027,100,000, which was less than the combined total for all other cities, viz., $3,587,486,621. Statistics of clearing operations of the Federal Reserve Banks and debits to individual accounts give additional support to this distinction.

The Government Returns, so far as they relate to credit conditions, are useful in two ways. The Currency Notes Account gives the total of notes outstanding, and the gold, Bank of England notes, and securities behind them. The total of notes is a useful index of the volume of currency in circulation, though it is by no means exact, since some of the notes form part of the reserves of the other English and the Scotch and Irish banks. The Treasury Bills Account is useful indirectly. It shows not only the amount of bills offered and applied for during the past week, but also the average rate at which they were discounted. This is a fair index of the direction in which money is flowing, for, if the rate be £2 2*s* 0.9*d* per cent, as it was during the week ending August 11, 1922, it may be inferred that business is less active than when, as in the week ending August 5, 1921, they were selling at £4 10*s* 10*d* per cent. This figure, however, must not be too hastily relied upon, for there enters into the question the fact that the total of Treasury Bills offered has fallen very considerably, thus indicating that the demands of the government for this type of short-term money has decreased.

Besides these official figures there are various unofficial sources of financial materials for those interested in British economic conditions. The London Joint City and Midland Bank, for instance, compiles monthly figures of new capital issues, and produces the combined tables of the deposits, advances, etc., of the nine London clearing banks. The *Economist* tabulates the daily average prices of gold and silver. The *London Times* compiles weekly averages of the exchange rates on important financial centers. The British *Economic Review* issues an index of security prices. The London School of Economics (University of London), in addition to performing a similar tabulative and interpretative service to that undertaken by the Harvard Committee on Economic Research,[1] calculates a short money index from the averages of the Bank rate, bankers' deposit rates, three-months bills, and day-to-day rates.

Nevertheless, British statistics are notoriously inadequate. It would assist both business men and economists enormously in these days of increasingly scientific execution of the world's material affairs if the British banks would agree to issue statistics that would bear comparison with those now published by the member banks of the Federal Reserve System. It is confessedly a forlorn hope. Hence a proper understanding of the sparse information now available is especially essential to American and other foreign investigators.

---

[1] See the *Manchester Guardian Commercial*, Special Reconstruction Numbers. The work is under the supervision of Professor A. L. Bowley.

THE PROBABLE ERROR OF THE DIFFERENCE BETWEEN TWO DIFFERENCES

By J. Arthur Harris

Given measures of two pairs of variables, w, x, and y, z, it is sometimes necessary to determine the probable error of the difference, d_1-d_2, where $d_1=x-w$, $d_2=z-y$.

A formula has doubtless been given somewhere in the extensive literature, but I do not recall having seen it. Since it must involve the value of $r_{d_1d_2}$ when there is any reason to suspect that the two differences may be correlated, a highly convenient method (which may be used when the correlations between the variables themselves are required and when variation and correlation are such that the ordinary theory of probable errors may be employed) is that based on the moments and product moments of the original variates, taken about 0 as origin. The formula for $r_{d_1d_2}$ has already been suggested[1] and employed in the study of growth increments.[2]

The moments $\Sigma(w)$, $\Sigma(w^2)$, $\Sigma(x)$, $\Sigma(x^2)$, . . ., and the product moments $\Sigma(wx)$, $\Sigma(wy)$, $\Sigma(wz)$, $\Sigma(xy)$, . . ., are generally required for other purposes of the investigation.

The constants for the differences are given by well-known formulas:

$$\bar{d}_1=\bar{x}-\bar{w},$$

$$\sigma_{d_1}^2=[\Sigma(w^2)+\Sigma(x^2)-2\Sigma(wx)]/N-\bar{d}_1^2,$$

and similarly for d_2, where the bars denote means and the sigmas denote standard deviations.

The product moment from which $r_{d_1d_2}$ may be deduced is given by

$$\Sigma(d_1d_2)=\Sigma(wy)+\Sigma(xz)-\Sigma(xy)-\Sigma(wz).$$

The standard deviation of d_1-d_2 may then be written

$$\sigma_{(d_1-d_2)}{}^2=\sigma_{d_1}{}^2+\sigma_{d_2}{}^2-2r_{d_1d_2}\sigma_{d_1}\sigma_{d_2}.$$

---

[1] Harris, J. Arthur, "Formulae for the determination of the correlation of size and of growth increments in the developing organisms." *Proc. Soc. Exp. Biol. Med.*, Vol. XVIII, pp. 4–5, 1921.

[2] Harris, J. Arthur, and Reed, H. S. "Inter-periodic correlation in the analysis of growth." *Biol. Bull.*, Vol. XL, pp. 243–258, 1921.